

ing with architecture is well explained and enforced in the following text:—

"Engineering and architecture are so intimately connected, if not to a certain degree identical, that it seems strange that they should be considered distinct, as are medicine and surgery. But this artificial division arises from the great and numerous works carried on in each department, and for the attainment of a mastery in which the life of man appears to be almost inadequate. But in truth the scientific principles which prevail in architecture equally direct the engineer—their practice should be the same, their studies the same, and the buildings and constructions in which they are engaged common to both. It may be conceived, and justly, that a line may be drawn between the mechanical operations of the engineer and the branch of science relating to machines and machinery being so distinct. But whenever construction is concerned, the architect can only be worthy of his important mission who possesses the science now sometimes considered to be exclusively appropriate to the engineer; and that engineer can have little hopes of placing the taste in his warehouses, viaducts, bridges, and other hydraulic erections, who has not studied in these schools which impart elegance, dignity, and character to the monuments required by the necessities or the luxuries of the nation."

These sentiments entirely coincide with our own views and practice. A right direction in educational courses of all descriptions is on the eve of establishment; and we may anticipate extraordinary results from mental power thus trained to embrace the constituents of the various branches of science.

The programme of study traced out in pages 26 to 29 is worthy of a school of architecture. The importance of the cultivation of first principles and the vitalising condition of the art are thus forcibly pointed out:—

"A recurrence to first principles is ever more essential than at this moment. For not only our own school, but those of our continental neighbours have reached a most critical period. We are all, in fact, in a state of transition. There is no fixed style now prevalent here or at Paris, at Munich or Berlin. There is no predominant predilection nor acknowledged reason for adopting any one of the old styles of art. We are wandering in a labyrinth of experiments, and trying by an amalgamation of certain features, in this or that style, of every period and country, to form a homogeneous whole with some distinctive character of its own, for the purpose of working it out into its fullest development, and thus creating a new and peculiar style. This movement has placed the schools of all countries in a state of great uncertainty; as yet we have no less leading principle as a guiding star."

Speaking of imagination and reason as the elements of proficiency in architecture, the cupola of St. Peter's, Rome, is instanced. Of this gorgeous structure, unparalleled in extent, and in the science applied in construction, it has been said:—

"Then, of temples old or altars new,
Stooped alone, with nothing like to thee—
Worship of God, the holy and the true;
Since Zion's desolation, when that be,
Forsook his former city, what could be,
Of earthly structures, to his honour piled,
Of a sublimer aspect—majesty,
Power, glory, strength, and beauty, there are
sleeked."

"The cupola of St. Peter's is one of the sublimest productions of the imagination. Originally conceived by Bramante, carried on by Michael Angelo, and completed by successive architects; the interior, at all points, with its graceful lines, its judicious divisions and splendour of decoration, seems another world of enchanting beauty soaring in mid air. So far the mind of the general spectator is more than satisfied. But the man of science investigates its construction, and the portentous rents and crumbling walls, held together only by iron ties, have for three centuries occupied the anxious care of the Papal government, and leave a consciousness of unsoundness and probable destruction."

"The Tower of Pisa, with its seven-storied peristyle, is now an object of wonder only that, with its great declination from the perpendicular, it has not fallen entirely down. The principal buildings of Bramante, erected, as they were, in haste to satisfy his impatient employers, all afford evidence of faulty construction, and thus disappoint the architect. Need I allude to a striking instance of modern blunders in this regard?—I mean the old Pantheon Theatre in Oxford Street. The original appears to have been a masterpiece of the kind, and a brilliant example of the taste of James Wright; but when rebuilt after a fire, by inferior hands, it was converted a ruinous property to the proprietors, from the want of sufficient strength in the construction; and the authorities forbade any spectacle to be held within its walls. Yet, although it is a great error,

on the one hand, to put too little strength, still, on the other hand, it is also an error, involving the character of the architect, if he be extravagant in the use of masonry, and needlessly squander money."

Some interesting observations follow upon construction; the qualities of materials; heating, lighting, and the ventilation of buildings; the Professor then proceeds to say:

"Sewerage and drainage are also of vital importance to large and densely-populated towns, and perhaps there is not, nor ever has been, a capital in which so much attention has been paid to this branch of science. Some of our main lines of sewers run from eight to fifteen feet wide, and from seven to ten feet high; and the crowds who hurry along are little conscious of the torrents of water and filth which are carried into the Thames by the stupendous subterranean galleries beneath the spot they are traversing."

We fully assent to the efficient manner in which the direction and construction of public sewers is managed. Mr. Donaldson is an authority on this subject, being, we believe, himself chairman of the commissioners. The importance of drainage was anxiously attended to by the ancients. *Pistarch* was a superintendent or commissioner of sewers.

With some extracts upon the qualifications necessary to the architect, from the well-known work of Vitruvius, the recommendations of Sir C. Wren for the maintenance of high-minded integrity, and a few well-chosen observations upon his assumption of the chair, the Professor closes his first discourse. Those that may follow we shall await with interest, and endeavour to render them useful to those of our class, who, though without the pale of academic instruction, are fully capable of appreciating the dicta promulgated at our seminars of art.

Introductory Lecture delivered at King's College, January 25, 1841, to the Class of Civil Engineering and Architecture. By PROFESSOR HOSKING.—London: John Weale.

We have before us two lectures delivered by this gentleman: it is to that bearing the date in the head-line that we now invite the attention of the reader.

It occurs that in our present number we offer three of these papers to notice, and we recommend our friends, particularly those at a distance, not to pass too hastily over these important transcripts. Separately considered, they are specimens of the degree of talent and spirit with which the Professors have entered upon a career of generous emulation, while in the aggregate they form, as it were, a harmonical index of the academic atmosphere of the institutions for the cultivation of our art which now grace this metropolis.

May we, without umbrage, set up a comparison between the modes of address and reasoning adopted by the Professors at King's and University Colleges? Is it not, kind reader, a critical question to propound in the infancy of our Journal? Assuming, however, that we have a majority of affirmatives, we proceed.

Those amongst you who may have heard Lewis Brougham and Lyndhurst from the judicial seat, and remarked the difference in diction and manner of these eminent personages and profound lawyers, will recognize the parity of our remark. Mr. Hosking is the Brougham of King's College, while, by a somewhat singular chance, in this world of mutation, Mr. Donaldson is the Lyndhurst of the sister lecture-room.

Looking to the date of this lecture, we are late in our notice, but early in the yrilmene we tender to Mr. Hosking as a competitor in the arena of science—but to business.

Mr. Hosking, with little prelude, rushes to the question of professional education, and the best modes of cultivating it. The fascinations of ancient art, so beguiling to the ear and to the senses, are on this occasion abandoned, and give place to homely examples, to the business of the day, to the works of British artists and artisans. Here is the text:—

"We cannot hope here to make young men carpenters or masons, but we hope to make them better qualified to compose, draw, estimate, and direct works of carpentry and masonry than they can be without such assistance as we offer them. In brooding proficient as a carpenter, a mason, or a smith, a young man is apt to overlook the importance of other handicrafts in favour of that in which he has acquired confidence; but a sound,

and indeed a somewhat extensive, practical knowledge of the modes of operation of all the leading crafts, of which the three I have mentioned, together with the bricklayer's craft, are the most prominent, is essential to the civil engineer, who only exists independently of the architect on the one hand, and of the machinist on the other, through his presumed superior practical skill in applying the operations of the carpenter, mason, bricklayer, and smith, in connection with those of the navigator or earthworker and miner."

The late Mr. Telford attained the highest eminence in his profession from the most humble commencement, and late in life—upon the experience of more than half a century—he thus recorded his own history and impressions: "The early part of my life," says Mr. Telford, "was spent in employment as a mason in my native district of Eddle, in the county of Dumfriesshire. Whereas regular roads were substituted for the old horse-tracks, and wheel-carriages introduced, bilgies, numerous but small, were to be built over the mountain-streams; these, however, furnished considerable employment to the practical mason, and I thus became early experienced in the requisite considerations and details." In such works, Mr. Telford goes on to say, "in farm-houses and in the simple parish-churches of the Scottish border,—convenience and usefulness only are studied, yet peculiar advantages are thus afforded to the young practitioner; for, as there is not sufficient employment to produce division of labour in building, he is under the necessity of making himself acquainted with every detail—in procuring, preparing, and employing every kind of material, whether it be the produce of the forest, the quarry, or the forge; and this, although unfavourable to the dexterity of the individual workman who earns his livelihood by expertise in one operation, is of singular advantage to the future architect or engineer, whose professional excellence must rest on the adaptation of the materials, and a confirmed habit of discrimination and judicious superintendence."

Such was the early education, and such were the matured opinions of a man who hardly left a corner of our island without some important work to record his name; of the man who made the Highland and Holyhead roads with their centuries of bridges, who drained fens, who built docks and harbours, who carried the Ellerslie Canal over the ridge of Langgollen and the Holyhead road over the Straits of Menai—who converted the Irish Sea with the German Ocean by the Calverton Canal, and the German Ocean with the Baltic Sea by the Gotha Canal;—for Telford's advice and assistance were sought by foreign nations, and Norway, Sweden, Russia, and Poland bear witness to the skill and fame of the Eddle Mason!

The brilliant achievements of that estimable and single-minded man, the late Mr. Telford, are the most striking facts on record that could be selected to stimulate students in the class to whom the lecture was addressed. We believe that it will not be wanting in effect in a far wider circle; a circle within which we would attract the talented and aspiring of all ranks in the building art.

Other quotations follow from Mr. Telford's works, pointing out the advantages he ultimately derived from his laborious occupations in handicraft; and his summary should be remembered by every artisan in the empire: he says,

"For this reason I ever congratulate myself upon the circumstances which compelled me to begin by working with my own hands."

The following observations on the present and future prospects of the combined sciences of civil engineering and architecture, have not been exceeded in point of truth. The student may well adopt them as a beacon, in his study to acquire proficiency in the exercise of his art; and they will originate, or we mistake, more of inquiry into qualification than has heretofore been instituted.

"Whilst the practical knowledge of Telford and Rennie,—the mason and the millwright,—exists in its effects upon those who had the advantage of working with and under those eminent hydraulic architects, the practice of civil engineering as at present constituted will continue; but to those who seek to engage in, and follow it must qualify themselves by direct application to the sources from which it springs, and upon which alone it can rest a further consistent existence. The civil engineer who attempts to compose, specify, and direct a work, without knowing how the materials to be employed are to be shaped and put together, or otherwise applied, connected, and secured, and how they will operate upon one another, and be acted upon by the agents with which they are brought into contact, or contact, must fail. It is, indeed, the